

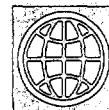
Reforming the Urban Transport Sector in the Rio de Janeiro Metropolitan Region

A Case Study in Concessions

Jorge M. Rebelo

In a bold effort to privatize Rio de Janeiro's urban transport sector, the state government showed that political decisiveness, transparency, and ingenuity in developing incentives are crucial to make loss-making operations attractive to the private sector. It also learned that not having a credible staff redundancy program might seriously undermine the benefits expected from concessions.

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Finance, Private Sector, and Infrastructure Department
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Summary findings

Rebelo describes a bold effort by the state government to increase private sector participation in Rio de Janeiro's urban transport sector, reduce heavy operating subsidies, and establish a foundation for making the sector sustainable.

This effort was undertaken with the help of three World Bank-financed loans:

- The Rio de Janeiro Metropolitan Transport loan, which provided assistance for the transfer of federally owned suburban railways to the state government.
- The Rio de Janeiro State Reform and Privatization Loan, which helped the state privatize and grant concessions for a number of its enterprises.

- The Rio de Janeiro Mass Transit Loan, which supported the reorganization of the sector and the concession of the Rio suburban railways (Flumitrens).

Most of the reforms in the urban transport sector have been implemented.

The lessons learned from implementation and the results obtained so far suggest that political decisiveness, transparency, and ingenuity in developing incentives are crucial to privatizing urban rail transport systems.

But the state also learned that not having a credible staff redundancy program might seriously reduce the benefits expected from concessions.

This paper — a product of the Transport and Urban Unit, Finance, Private Sector, and Infrastructure Department, Latin America and the Caribbean Region — is part of a larger effort in the region to help borrowers concession loss-making urban transport operations to the private sector. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Allison Turner, room I5-005, telephone 202-473-0933, fax 202-676-9594, Internet address aturner@worldbank.org. Policy Research Working Papers are also posted on the Web at <http://www.worldbank.org/html/dec/Publications/Workpapers/home.html>. The author may be contacted at jrebelo@worldbank.org. April 1999. (24 pages)

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Reforming the Urban Transport Sector in the Rio de Janeiro Metropolitan Region: A Case Study on Concessions

Jorge M. Rebelo¹

This paper describes a bold effort by the Rio de Janeiro State Government to increase private sector participation, reduce operating subsidies and set the foundations for long-term sustainability of its urban transport sector. This effort was undertaken with the help of three World Bank-financed loans: The Rio de Janeiro Metropolitan Transport Decentralization loan, which assisted in the transfer of federally-owned suburban railways to the State Government; the Rio de Janeiro State Reform and Privatization loan, which assisted the State in the privatization and concessioning of a number of its enterprises; and the Rio de Janeiro Mass Transit loan, which supported the reorganization of the sector and the concession of the Rio suburban railways (Flumitrens). Most of the urban transport sector reforms have been implemented. The lessons learned from the implementation process adopted by the State as well as the results obtained so far suggest that political decisiveness, transparency, and ingenuity in devising incentives are key to privatizing urban rail transport systems. But they also show that not having a credible staff redundancy program may seriously reduce the benefits expected from the concessions.

URBAN TRANSIT PROBLEMS IN THE RIO DE JANEIRO METROPOLITAN REGION

1. The Rio de Janeiro Metropolitan Region (RJMR) comprises 546,865 hectares and 9.8 million inhabitants, spread irregularly over 19 separate municipalities. It is dominated by the Rio de Janeiro municipality, with 5.7 million inhabitants. Within the metropolitan region roughly 76 percent of the population lives on just 15 percent of the territory.
2. The Rio de Janeiro municipality alone accounts for 56 percent of the population of the State and 77 percent of the income of the metropolitan area. It employs 4.5 million people and generates roughly 85 percent of the city's income.

Buses and Cars Account for Too Large a Proportion of Total Trips Made

3. Every day 13 million person trips are made in the metropolitan region, of which 40 percent are home-to-work commutes. Sixty-seven percent of all trips are by public transport, 11 percent are by automobile, 20 percent are by foot, and 2 percent are by

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other modes. Of the 8.7 million trips a year made on public transportation, 77 percent are by bus (most of which are run by private operators), 14.5 percent by automobile, 4 percent by suburban train (Flumitrens, formerly CBTU-RJ), 3 percent by subway (Metro), 1 percent by ferry (CONERJ), and 0.5 percent by other modes. About half of all public transport trips involve transfers (47 percent of all train trips, 41 percent of all bus trips, and 37 percent of all Metro trips).

4. Lack of integration between the 23-kilometer long Metro and the 264-kilometer rail network discourages more rail trips. As a result, buses and automobile are used, creating heavy congestion during peak hours and significantly increasing commuting time. It is estimated that each *carioca* (inhabitant of Rio) wastes 10-15 days a year because of high traffic congestion.
5. The problem is exacerbated by Rio's many hills and tunnels, which make it vulnerable to traffic congestion, especially when accidents occur or cars break down. The fact that there is limited space for fully segregated busways also contributes to bus congestion.

Poor People Bear a Disproportionate Share of the Burden of Inadequate Mass Transit

6. The main users of the public transport system are from the Baixada Fluminense, one of the lowest-income areas of the RJMR. These users suffer from a shortage of capacity at peak hours that causes severe overcrowding (more than 10 passengers per square kilometer). They spend more than a fourth of their personal income on transit fares and endure long commutes (2.5-4 hours a day) that often require multiple transfers.

Excessive Congestion Adversely Affects the Environment

7. In 1994, 1.7 million vehicles were registered in the Rio de Janeiro metropolitan region. These vehicles have degraded the city's air quality by increasing the levels of carbon monoxide, ozone, and particulate matter. The problem is particularly acute in tunnels, which are poorly ventilated. Although vehicular air pollution has been somewhat mitigated by the use of by use of alcohol the problem remains severe. Vehicular accidents have become a major source of environmental risk in Rio de Janeiro. Congestion and overcrowding of the public transport system also contribute to environmental stress, prompting trampling and fights.
8. Lack of coordination between the three levels of government responsible for urban transport, particularly between the State and the municipality of Rio de Janeiro, led to poor tariff and modal integration, lack of prioritization in urban transport investments, and the absence of a common policy on pricing and subsidies. With the exception of one state-owned company (CTC), in 1995-96 all bus services were provided by private operators, which do not receive direct subsidies. In contrast, Flumitrens received US\$180 million in subsidies, Metro US\$109 million, and CONERJ US\$30 million in 1995 (at the start of the reform program).

INSTITUTIONAL FRAMEWORK

9. Urban transport responsibilities within a municipality fall under the jurisdiction of the municipality's *prefeitura* (mayor's office). Metropolitan transport (in most cases, urban transport involving more than one municipality) is under the jurisdiction of the state. The State Secretary of Transport (SECTRA) oversees Flumitrens (suburban rail), Metro (subway), CTC/SERVE (bus), CONERJ (ferries), and CODERTE (terminals), all of which are owned by the State. Table 1 summarizes the basic data for these state-owned companies in 1995, i.e., at the start of the reforms; and Annex 1 describes each of them in more detail. Urban transport in the municipality of Rio de Janeiro falls under the jurisdiction of the municipal Secretary of Transport, who oversees mainly buses (all of which are private) and traffic management

Table 1

Name of Company	Mode	Number of employees	Annual number of passengers (millions)	Annual Revenues (millions us\$)	Annual Payroll Cost (millions us\$)	Annual Operating Subsidy (millions us\$)	Subsidy per passenger (us\$/pas)
Flumitrens	Suburban rail	7871	93	34	180	180	1.94
Metro	Subway	3272	97.2	31	111	109	1.12
Conerj	Ferry boats	1097	24	11	28	30	1.25
CTC/SERVE	Buses	2496	26.6	13	30	37	1.39
Coderte	Terminals	695	na	13	7	(1)	n.a
Total		15431	240.8	102	356	355	1.48

Values are for 1995, at the start of the reform program

10. Problems with the urban transport system and the very high subsidies paid to support operating deficits in the sector prompted the State administration, which took over in January 1995, to establish improving metropolitan transport as one of its main priorities. Specific goals included extending the Metro (subway system), construction of which was halted in 1987; transforming the Flumitrens rail system into a modern Metro-like operation; increasing the participation of the private sector in the operation and investment of all urban transport systems; and introducing policies that would promote the use of urban transport. Rio de Janeiro approached the Bank for a loan to help reform the sector and complete the work started with the Metropolitan Transport Decentralization loan.

ISSUES TO BE ADDRESSED BY THE REFORM PROGRAM

11. A number of key issues needed to be addressed to improve the supply of urban transport services and to guarantee their long-term sustainability. These issues included:
- Increasing capacity and ensuring safety
 - Addressing institutional and regulatory issues
 - Recovering costs through tariffs and improving financial management
 - Targeting subsidies at the poor
 - Reducing environmental impact
 - Addressing planning issues

- Increasing private sector participation involvement in investments and operations

Increasing Capacity and Ensuring Safety

12. The most important challenge facing Rio de Janeiro was the need to increase cost-efficient peak hour capacity in order to guarantee an acceptable level of service to the average commuter under reasonable safety conditions. This could be done by rehabilitating and restructuring Flumitrens and building new mass transit systems (busways, Light rail transit systems ; improving traffic management; and reducing traffic and transit accidents through a combination of transit safety education campaigns, law enforcement, and traffic engineering.

Addressing Institutional and Regulatory Issues

13. Three important institutional and regulatory issues required attention. First, the respective roles of state and municipal governments in financing, planning, and operating urban transport services in accordance with the 1988 Constitution need to be defined. Second, an entity needed to be created that would be formally empowered by the Rio de Janeiro metropolitan region to plan, set, and coordinate priorities for new investments and modal integration in order to ensure a minimum of planning continuity. Third, appropriate modifications to the regulatory framework needed to be made. These changes needed to include eliminating any remaining regulatory barriers that might prevent free entry or competition in the market for transport services, especially bus services.

Recovering Costs through Tariffs and Improving Financial Management

14. The transport sector needed to be operated so that costs were recovered. Specifically, tariffs needed to be set so that together with subsidies they covered at least the long-run variable costs (defined as out-of-pocket costs plus depreciation of equipment and cost of capital) of the service provided . Fare evasion needed to be controlled. Tariffs also needed to reflect appropriate peak and off-peak pricing.
15. The huge subsidies paid to the urban transport companies indicated the need to improve financial management in order to reduce the burden on the State. The mass transit companies needed to cut costs, eliminate unnecessary staff, and appoint more financial managers. Funding mechanisms needed to be revamped in order to ensure adequate financing for new mass transit systems and the sustainability of the current systems.

Targeting Subsidies at the Poor

16. While the blanket subsidies paid to Rio de Janeiro's mass transit companies needed to be eliminated, the needs of the poor urban needed to be addressed. Urban households have been devoting increasingly large proportions of their incomes to transport, and transport-related expenditures have come to represent a considerable burden on local government budgets. In the short term, policymakers needed to address the issue of targeting urban transport subsidies and extending them to the informal sector that is

not currently covered by mechanisms such as the *vale-transporte*². Appropriate mechanisms for financing such subsidies (such as tariff differentiation or contracted budgetary transfers) and implementing them (using tokens, multimodal passes, or differential tariffs) needed to be designed.

Reducing Environmental Impact

17. The environmental impacts of urban congestion and noise pollution in the urban area needed to be reduced through cleaner and quieter transport systems. Policymakers needed to assess the potential role of market-based incentives to address pollution. To the extent possible, they needed to implement the polluter pay principle in order to minimize the fiscal burden implied by de facto government subsidies to polluters. They also needed to allocate responsibilities for enforcing the law and defining tougher standards across government levels. The State Environmental Agency (FEEMA) needed to be equipped to monitor vehicle emissions and noise.

Addressing Planning Issues

18. Transportation planning needed to be improved. A better traffic data base and traffic management system needed to be established and a better system adopted for evaluating new investments, especially the proposed LRT system for the Niterói-S. Gonçalo link or new Metro extensions. To achieve these objectives, a formal coordinating agency for urban transport needed to be established in the metropolitan region.

Increasing Private Sector Participation

19. Private sector participation in Rio de Janeiro's mass transit sector was viewed as a way of improving the level of service and ensuring that appropriate investments in extending and maintaining the system were made. Maintenance of the rehabilitated railway fleet needed to be improved (fleet availability was down to 58 percent). The problem of fare evasion—estimated to cost Flumitrens 30 percent of its revenues—needed to be dealt with as well.
20. When the Rio de Janeiro State Government administration took office in January 1995, it inherited a very critical financial situation and was almost unable to meet its payroll in the first months of its mandate. Faced with this scarcity of funds, the Governor asked all his secretariats to embark on a State Reform and Privatization program aiming at selling and/or concessioning out to the private sector loss-making state-owned enterprises. The remainder of the paper describes the reforms undertaken in the urban transport sector which at that time received annual blanket operating subsidies which amounted to 8-10% of the total State revenues

² The *vale-transporte* is a targeted subsidy, imposed by federal legislation, by which every employer with more than 9 employees must pay the difference between home-to-work transport costs of employees and 6% of their salaries. The employer can then deduct these costs from its income tax.

OBJECTIVES OF THE STATE REFORM PROGRAM

21. Reform of the urban transport sector sought to achieve three main objectives:

- Substantially reduce the level of annual subsidies paid to urban transport agencies (estimated in 1995 at US\$363 million, or 10 percent of State revenues) by a combination of restructuring and/or sales, concessions, or management contracts to the private sector.
 - Improve the level of service provided to users of urban transport services.
 - Finance overdue maintenance, which reduced the capacity of operating agencies to increase revenues and provide an acceptable level of service.
22. The proposed reforms focused on actions that would facilitate administrative reforms and restructuring of the agencies. The reform program also sponsored studies to define the best options for increased private sector participation in the agencies and identified rehabilitation activities designed to boost productivity of assets that had been immobilized because of lack of maintenance funds.
23. Policymakers expected to eliminate subsidies to Metro, CONERJ, and CTC/SERVE and to reduce subsidies to Flumitrens to one-third of their budgeted 1996 level by the end of the project. The State also agreed to introduce financing mechanisms to fund urban transport operating subsidies while needed and to eventually contribute toward future expansions. One of the mechanisms expected proposed at that time was a surcharge on the vehicle ownership tax, which is collected by the State.

Privatizing Flumitrens and Metro

24. The State recognized early on that it had no comparative advantage in running any of the transport operating agencies and that both Flumitrens and the Metro should be managed by the private sector. It agreed that the concession to operate the Metro would begin no later than January 1997 and that the concession to operate Flumitrens would begin by January 1998.
25. To make both systems more attractive to the private sector, the State asked both institutions to begin downsizing in order to increase the ratio of revenue passengers to staff. Payroll cuts of as much as 50 percent (or concomitant increases in revenue passengers) were sought.
26. By May 1996 both agencies had exceeded the targets set by the government. The initial staff reduction program eliminated 1,800 positions at Flumitrens and 800 positions at the Metro. The staff cuts affected the administrative, engineering, and planning divisions of the agencies, all of which were greatly overstaffed.
27. In addition, the State asked Flumitrens to put in place a fare evasion control system to increase revenues. It also instructed both Flumitrens and the Metro to identify land and buildings that could be sold or leased to increase non-operating revenues.

28. The State looked to the state-owned subway system in Santiago, Chile, as a model for staffing the Metro. That system, which is about as long as the Rio de Janeiro system and carries almost twice as many passengers at the same average tariff, has registered an operating surplus. For Flumitrens the State sought to emulate the Buenos Aires' suburban rail system, which is operated by private concessionaires. That system enjoys a productivity that was, in 1995, three times as high as that at Flumitrens.
29. To identify the optimal type of private management for each company, the State conducted a study to evaluate the options for private sector participation in Flumitrens and the Metro. This study was funded by an ongoing Bank loan which financed the decentralization of the rail system from the federal to the state government.
30. Originally, the concessions for Flumitrens and the Metro had been expected to follow the Argentine model. Under that model, the government would pay the concessionaire a subsidy, which would decline over time to zero. (Subsidies were provided to concessionaires in Buenos Aires because the government reserved the right to set tariffs affordable to the low-income population.) After subsidies ended, the concessionaire would pay the government an annual fee. To make the concession attractive to potential investors, the government rather than the concessionaire bore the cost of the investment plan, which was implemented by the concessionaire. The bidder with the lowest net present value of the cost of investment plan plus the subsidy to be paid by the government minus the concession fee to be paid by the concessionaire would win the concession.
31. The Argentine model is similar to granting a long-term management contracts to operate mass transit systems. It differs from a typical management contract, however, in that the commercial risk lies with the concessionaire and the concession term is generally longer than the usual management contract term. The Argentine model's main advantage is that the concessionaire must try to comply with the investment plan at the lowest cost and propose the lowest subsidy schedule to win the bid, knowing full well that if its net operating deficit is less than the subsidy, he will be able to keep the difference. Although the plan involved government financing of the original investment plan, experience has shown that after implementing such plans, concessionnaires are willing to make their own investments in order to attract more customers and increase revenues while decreasing costs by improving technology.
32. The US\$373 million investment plan proposed for Flumitrens was designed to rehabilitate its rolling stock, signaling and telecom plants, and stations in order to allow it to accommodate ridership of 1 million passengers a day by 2000. Funds were to be provided under the proposed Rio de Janeiro Mass Transit Project, which was being prepared by the World Bank.
33. The Metro had already secured the funds needed to double its ridership and increase its route length from 23 to 35 kilometers. The US\$620 million investment for the Metro was financed by a loan from Brazil's National Development Bank (BNDES).

The loan was to be used to complete work started more than 10 years ago but halted because of the State's debt with the Federal Government. This debt had been pardoned as part of the agreement to decentralize the Flumitrens system from the Federal to the State.

Privatizing CONERJ

34. The reform program envisioned selling the assets of CONERJ, the ferry boat company, to the highest bidder. Under the plan, the Secretary of Transport would oversee the private sector concessionaires who would operate the ferry lines in the Guanabara and Sepetiba Bays. The State commissioned a valuation study and set a date of November 1997 for completing the sale.

Liquidating CTC and SERVE

35. The reform program envisioned liquidating CTC and SERVE, the state-owned bus companies. Their assets, mainly buses and garages, were to be sold to the private sector. The routes operated by the companies would be taken over by private bus companies, which would be selected through competitive bidding.

Selling Off CODERTE

36. The reform program also envisioned selling CODERTE, the agency in charge of operating the State's terminals and parking garages. The State commissioned a study to determine the value of the assets involved, obtain all the legal titles of the properties, and prepare terms of reference for selling the agency.

Overarching Sector Reforms

37. Before awarding concessions to the private sector in the urban transport sector, it was important to define a basic sector regulatory framework and the responsibilities of each of the urban transport agencies involved. The State created an independent State Regulatory Commission (ASEP-RJ) which would oversee all the major sectors in the State, including urban transport. This multisectoral commission does not have a transport division. It would use a pool of economists, lawyers and other specialists to deal with all the sectors. Regulation of all modes except buses fall under ASEP-RJ. The bus lobby was able to veto the inclusion of bus regulation in ASEP-RJ's mandate. Instead they continued to be regulated by DETRO, an agency of SECTTRAN.
38. Finally, the State created a Regional Transport Coordination Commission (AMTU-RJ) which acts as a policy coordinator for the three levels of government involved in urban transport, as an adviser on tariff and subsidy policy and a main forum to discuss and prioritize the main investments in the RJMR. AMTU-RJ will probably be called upon to make presentations to ASEP-RJ but will not have regulatory power.

OUTCOMES OF THE REFORM PROGRAM

39. By 1998, privatization of all of Rio de Janeiro's mass transit systems had been completed. Concessions for the Metro, Flumitrens, and CONERJ had been awarded, CTC/SERVE had been liquidated, and CODERTE's main asset had been sold.

The Metro Concession

40. The Metro system was concessioned to the private sector on December 23, 1997. Two studies were commissioned before the concessions were granted. The first study examined the basic parameters to be included in the concession bid documents, analyzed demand of the system under different scenarios, prepared financial projections, reviewed the legal and institutional framework, and proposed a number of actions to be considered by the State to deal with redundant Metro staff who would not be absorbed by the concessionaire. The study, which was financed by the Rio de Janeiro Metropolitan Transport Decentralization loan and executed by consultants, also reviewed the impact of the federal concession law on the proposed concession.
41. The financial projections included in the study suggested that there would be a period of one to two years during which the system would require an operating subsidy from the State. This subsidy estimate raised a number of issues because federal law did not seem to allow for a "negative concession" (one in which the State would pay subsidies to the concessionaire). The State would have to pass a law to allow for such subsidies.
42. The second study, financed by the State and carried out by a local consortium, helped produce the preliminary background memorandum, the cash flow analysis, the environmental and safety assessment, the inventory of existing infrastructure and equipment, and the procurement documents. It also assisted the State in presenting the concession documents to the public.
43. Despite the consultants' analysis, which showed that there would be at least two years during which an operating subsidy would be needed, policymakers decided not to offer subsidies. Several factors influenced their decision. First, the concessionaire would have no major investment obligations; all investment was to be financed by the State. Second, the concessionaire would take over all ongoing extensions of the system financed by the State as well as additional rolling stock already ordered by the State. Third, the staff cuts assumed by the consultants were considered overly conservative. The State believed that the concessionaire would reduce staff by more than the consultants projected. Fourth, tariffs were raised as part of the government's policy of accounting for inflation.
44. The State also decided to maintain part of the existing Metro organization to handle issues related to redundant personnel not absorbed by the concessionaire, to assist the Secretary of Transport with extensions of the system, and to provide support to the State regulatory agency in monitoring the performance and safety indicators included in the contract. The State intended to reduce to a minimum the staff of the residual

Metro agency by incorporating the remaining staff in SECTRA or ASEP-RJ. Redundant staff would be compensated.

45. The Metro concession process resulted in a number of interesting outcomes:

- The number of bidders was high (table 2), a clear indication that they were convinced that they could turn around a situation in which the annual operating subsidy was about US\$109 million.
- Many foreign investors bid on the concession, even though no international road show was mounted to attract interest.
- The net present value of the concession fee of the winning bid was more than five times the minimum price set in the bidding documents. (The main criticism from the political opposition, after the concession, was that the minimum price set by the State had been too low.)
- There were no official protests against the outcome of the concession.
- The consortium winning the concession was led by a foreign company (an Argentine firm is the operator) and a local investment bank. This shows that there were no preset strategy to favor local companies.
- There were no strikes or destruction of inventory, as occurred in other cases in which a state-owned company was taken over by the private sector.
- The concession process was undertaken in one shot, and initial legal injunctions against the concession were easily defeated.

Basic features of all the concessions are shown in Table 4 at the end of the paper.

Table 2. Consortia Bidding for the Rio de Janeiro Metro Concession

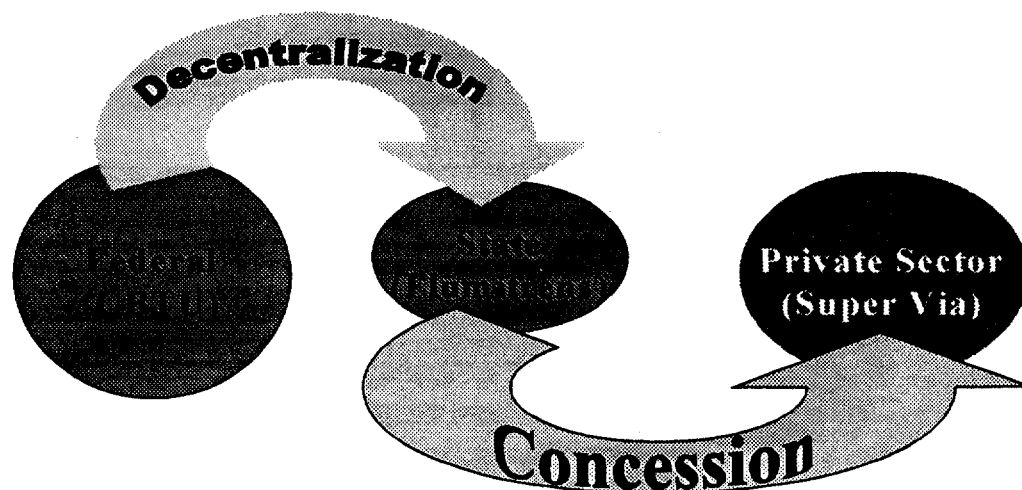
<i>Company</i>	<i>Bid (in millions of R\$)</i>
Opportrans (Brazilian) Cometrans (Spanish)	291.6
Andrade Gutierrez (Brazilian) Guanabara Diesel (Brazilian) CGE A Transport (French) RATP (French)	205.5
Cascais Participações S.A. (Brazilian) Bozano Simonsen<(Brazilian) Metrovias Argentinas (Argentine)	133.7
Emepa (Argentine) MPE (Brazilian)	111.1

Note: 1 US\$=1.03 R\$.

The Flumitrens Concession

46. The Flumitrens concession process was more complicated than the concession for the Metro. Flumitrens was seen as a riskier concession, and its privatization was left to the end of the concession program. Several factors and hasty decisions adversely affected the process and forced decision makers to rethink the process on two occasions.
47. Flumitrens was transferred to the State in 1995. At that time, it was benefiting from a World Bank loan that helped fund the decentralization of the system from the federal to the State. Figure 1 explains this two step process. The decentralization was required by the 1988 Constitution and the system could only be privatized by the State. At the time of the transfer, the federal government agreed to pay a full year of staff salaries to the State, which was expected to use the funds to reduce redundant staff. It was also expected that the investments funded by the Bank loan, especially the rehabilitation of the rolling stock, would allow Flumitrens to maintain its ridership and prepare for the concession. As a result of several bad decisions and delays in the rehabilitation of the trains, however, train fleet availability decreased, passenger demand fell, and fare evasion increased.
48. In 1996 the State initiated a rationalization program. Flumitrens continued to suffer from lack of train availability, however, because the Brazilian company that won the train rehabilitation contracts in international competitive bidding did not meet the proposed schedules. As a result, ridership continued to fall.
49. The Bank had agreed to finance another loan to rehabilitate the remaining fleet if the State would privatize Flumitrens. Rehabilitation of the infrastructure and equipment financed by the decentralization loan plus the additional rehabilitation provided by the new loan (Rio de Janeiro Mass Transit loan was expected to attract private sector interest in bidding for the concession.

Fig. 1 Decentralization and Concession of Flumitrens



50. Two studies were commissioned as part of the concession process. The first study, financed by the Rio de Janeiro Metropolitan Transport Decentralization loan and executed by consultants, examined the basic parameters to be included in the concession bid documents, estimated demand under different scenarios, prepared financial projections, reviewed the legal and institutional framework, and proposed a number of actions to be considered by the State to deal with redundant staff who would not be absorbed by the potential concessionaire. The study also reviewed the impact of the federal concession law on the proposed concession. The study's financial projections suggested that there would be three to four years during which the system would require an operating subsidy (of roughly US\$150 million) from the government
51. The second study prepared the preliminary background memorandum, cash flow analysis, environmental and safety assessment, inventory of infrastructure and equipment, and procurement documents. The study was financed by the State and conducted by the same local consortium that conducted the Metro study. In addition, through a Bank-administered grant from Japan, funds were made available to Flumitrens to hire consultants to help the State review the cash flow analysis and to mount a road show in Miami. The purpose of that show would be to explain the process to potential concessionaires; the grant also helped in funding procurement consultants, and to prepare the "data room," i.e., the room where all the documentation prepared by the State on Flumitrens would be made available to potential bidders. The main responsibility for the preparation of the procurement documents remained with the consortium hired by the State. That consortium also helped the State present the concession documents to the public (public audience), a step required by Brazilian law.
52. The Metro concession, which preceded the Flumitrens concession, was a great success. However, the opposition parties harshly criticized the minimum price set for the concession and accused the administration of having tried to give away State property to the private sector. Sensitive to these concerns, State officials handling the Flumitrens privatization decided not to offer an operating subsidy as part of the Flumitrens concession. Instead, State officials devised a formula for providing the winning bidder with funds for additional capital investments and approving increases in tariffs if improvements (such as installation of air conditioning) were made to the trains. It was expected that such additional capital plus the Bank loan would be sufficient to attract private sector interest in the concession.
53. World Bank procurement guidelines stipulate that if the bidding documents for the concession include the package of investments financed by the Bank and the bidding process follows the Bank's rules on international competitive bidding, the winning party has the right to execute the investment package without further procurement (paragraph 3.13 a. of the Bank's procurement guidelines). This provision represented a great incentive for the private sector, because it ensured that the investments that were still required, mainly train rehabilitation, could be implemented by the

concessionaire. Bank rules required that concession procurement documents be approved by the Bank. This requirement was agreed to at the outset and explained in detail to the consultants who assisted the State.

54. In December 1997 the State provided the Bank with a first draft of the prequalification documents for the Flumitrens concession. Review of the documents revealed that Bank procurement guidelines—which, given the very high value of the investment package, were very strict—had not been followed. The Bank demanded that changes be made so that the following rules were respected:

Procurement documents must be in English, Spanish, or French. The Bank rejected the proposal by the Attorney General's office that the official version of the documents be in Portuguese (with an English translation provided) and that the Portuguese version of the documents be used in cases of confusion over the meaning of the translation.

Only member countries of the Bank are eligible to bid on the concession. Bank procurement guidelines permit only member countries to submit proposals for works, goods, and services financed by the Bank. The State argued that since the concession would last 25 years while the Bank-financed loan would end in 5 years, its own rules should apply regarding which countries are eligible to bid. According to Brazilian state and federal laws, all countries with which Brazil maintains friendly relations, including the Democratic People's Republic of Korea and Cuba, are eligible to bid on projects. The Bank rejected the State's position.

Bids can be submitted directly. The Bank was unwilling to accept the process adopted in the Metro privatization. In that concession, each bidder was required to hire a stockbroker from the Rio de Janeiro Stock Exchange to present its proposal. Such a practice clearly violated Bank procurement rules, which stipulate that parties submitting proposals cannot be prevented from doing so directly. The State argued that it had been using the Rio de Janeiro Stock Exchange for all its privatization auctions and that doing so had brought transparency to the process. The Bank rejected the State's position.

The standard procurement schedule must be followed. Bank procurement guidelines require that bidders be given at least 45 days for prequalification plus at least 60 days after the bidding documents are issued. The State wanted to shorten the process by allowing only 20 days for prequalification and issuing the bidding documents before the results of the prequalification were released. The State argued that the accelerated schedule was necessary in order to complete the process before the upcoming elections for State governor. The Bank rejected the State's position.

The format of the bidding documents must conform to Bank guidelines. The format of the bidding documents was not acceptable to the Bank because the technical specifications, which should normally appear as annexes to the bidding documents, were part of the contract. In a contract of this size, the review committee would not accept major deviations from standard procedures for international competitive bidding.

55. The Bank asked the State to resubmit the documents once the changes had been made. Faced with the choice between meeting Bank procurement guidelines (in order to be able to include the investment package in the concession bid) and meeting the tight schedule the State had set for itself, however, the State decided to proceed with the concession without resubmitting its documents to the Bank. National procurement rules were thus adopted, and the Bank-financed investment package was not included as part of the concession bid.
56. Excluding the Bank loan made the concession less attractive to some private investors. Because the investment package was not included in the concession bid, the package had to be procured under the traditional procurement process. Under this type of process, procurement is conducted by the State as it is done in traditional projects, and companies that do not win the concession may bid on some or all lots. The winning concessionaire would not be allowed to bid on the package because of conflict of interest. Because of that, it was feared that civil works contractors and equipment rehabilitation contractors who were initially very interested in the concession would be less inclined to bid.
57. The State administration worked feverishly to prepare the procurement documents under Brazilian law and called for pre-qualifications. Five consortia indicated that they would seek pre-qualification. At the last minute, however, only one consortium appeared ready to present the bid bond required. Suspecting collusion, the State cancelled the first bid and set a new date for the bidding process.
58. In the meantime, the State included changes in the bidding documents to make the process even more transparent and to allow time for other bidders to enter. It called for new pre-qualifications, with the minimum price set at US\$28 million plus the cost of materials Flumitrens held in inventory. The net present value of the bid would include other than the net present value of the offer above the minimum price to be paid over the concession period, the cost assumed by the bidder to repair the rolling stock fleet listed as optional in the bid (without out-of-pocket payment to Flumitrens) plus the discount offered on the capital made available by Flumitrens. This capital, another incentive added by the State, consisted of the receivables from the remaining fee payments from the Metro concession and were to be used toward rehabilitating the rest of the train fleet. Providing these funds, which really represented a capital subsidy, was an ingenious yet risky way of providing capital for rehabilitation. Finally, an increase in tariffs was allowed if the bidder would equip the trains with air conditioning within a certain deadline.
59. Five consortia submitted bids for the concession (table 3). The highest price was more than six times the minimum price set. The winning proposal was from a Spanish-Brazilian consortium, which will carry out much of the investment package, including rehabilitating many trains.

Table 3. Consortia Bidding for the Flumitrens Concession

<i>Company</i>	<i>Bid (in millions of R\$)</i>
Bolsa 2000 (Brazilian) Caf (Spanish) Rede Nacional De Los Ferrocarriles (Spanish)	279.6
Rio Express (Brazilian) Andrade Gutierrez Auto Viação 1001 (Brazilian) Opportunity (Brazilian) RATP (French)	164.7
Pem T'trans (Brazilian) Pem Engenharia (Brazilian) Trans (Brazilian) ATM (Italian) Breda Construziones Ferroviarias (Italian)	46.3
Canari (Brazilian) Canari Participações (Brazilian) MPE (Brazilian) Emepa (Argentine) Transurb (Belgian)	44.4

Note: 1US\$=1.03 R\$

The CONERJ Concession

60. The concession for CONERJ, the ferry boat company, was won by Andrade Gutierrez (Brazilian), the only consortium to bid on the project, for the minimum bid price (R\$28.4 million). The two other prequalified consortia decided not to bid at the last minute raising accusations of possible collusion and preventing competitive bids. This incident was a good lesson for the State which became more vigilant during the Flumitrens concession process. Andrade Gutierrez is also the concessionaire of the toll bridge (Rio-Niterói), which is the main link for automobile traffic between the two sides of the bay.

The CTC/SERVE Liquidation

61. Both CTC and Serve were liquidated and their routes and equipment auctioned to private sector operators. The move guaranteed that service would be provided by private operators, which do not receive subsidies from the State.

The CODERTE Sale

62. CODERTE's main asset, its parking garage in downtown Rio de Janeiro was auctioned for R\$80 million.

LESSONS LEARNED

63. Privatization of the transport sector in Rio de Janeiro Metropolitan Region represented a valiant effort by a state administration to increase private sector participation and reduce subsidies in a sector that had been heavily subsidized. It allowed the State to get out of a business in which it had no comparative advantage, to depoliticize the process of appointing directors, and to obviate the need to pay subsidies to expand the sector.
64. Will the effort lead to better service? All indications are that it will. In the case of the Metro and CONERJ, the results of privatization are already evident because demand is up and the level of service offered is better. In the case of Flumitrens, service improvement will take a bit longer, but it would be very difficult to offer worse service than that offered by either the federal or the State administration. Operating subsidies at all the companies have been eliminated. However, there are still high payroll costs at Metro and Flumitrens because of redundant staff not absorbed by the concessionaires. If all goes well, the State will probably be able to reduce its payroll costs with the holding companies to the minimum required to retain only the crucial personnel for managing expansion plans and monitor their concessions.
65. The Rio experience highlights the important of having the secretary of planning or finance rather than the sector secretary lead the privatization effort. In Rio de Janeiro the reforms were lead by the State Secretary of Planning, Marco Aurélio Alencar, who championed the program. Alencar made decisions swiftly, and his timing was right (except in the case of Flumitrens, which should have been privatized earlier). His leadership and willingness to listen to comments by the presidents of the operating agencies and the Secretary of Transportation were invaluable. He also had full authority from his father, the State Governor, to take all steps to implement the program. This certainly reduced the chances of government infighting which is quite common in privatization processes.
66. What role did the Bank play in the process? The Bank performed a useful function throughout the process by identifying the options available and sharing information on other concession experiences around the world with policymakers. Funding for the first studies evaluating options for privatizing the systems was provided by the Bank as part of the financing of the decentralization of the rail system. That loan also allowed the State to restart the Metro works, which had been halted for almost 10 years. Preparation of the Rio de Janeiro Mass Transit loan set off the first brainstorming session with decision-makers about concessions. It also helped attract the attention of the State's vice-governor, who recognized the need to increase private sector participation in the sector and to restructure the sector by creating AMTU-RJ. Finally, during the preparation of the State Reform and Privatization loan the Bank served as a sounding board and provided multisectoral support by demanding the establishment of a regulatory agency. That agency will be crucial in resolving disputes and monitoring the concessions.

67. Lessons can be learned from the problems encountered in Rio de Janeiro. The scheduling of the Flumitrens privatization and the State's decision to hire the same consultant for the Metro and Flumitrens concessions slowed the process because the consultant was unable to deal with both concessions at the same time. Better knowledge of Bank guidelines could also have saved some time and aggravation.
68. The State's project team found the Bank's procurement guidelines too inflexible. They argued that the Bank could have accommodated some deviation from its procurement guidelines because the Flumitrens concession was not a typical project and the Bank's procurement guidelines are not adapted for concession procurement. The Bank's guidelines could probably have been followed. However, the need to complete the concession before the election meant that the State lacked the time needed to meet the Bank's guidelines. Despite the fact that those guidelines were not followed, the process appears to have been transparent, as the postponement of the first Flumitrens prequalification bidding shows.
69. The Rio de Janeiro experience suggests that even in systems experiencing very high deficits as a result of inefficient management, inadequate infrastructure, and inferior equipment, concessions can be designed that attract the private sector. Unlike Buenos Aires, the State of Rio de Janeiro was able to privatize its urban transport systems without providing operating subsidies. This major achievement must be attributed to the stand taken by the Secretary of Planning, who believed that the private sector would be willing to take over the systems even if they expected to experience operating deficits in the first few years.
70. Why was it possible to grant these concessions in Rio de Janeiro? Why have other cities not been able to do so as quickly? Several factors seem to have been at work:
- Operating deficits in Rio de Janeiro were as high as 8 –10 percent of State revenue. These deficits made it difficult for the political opposition to oppose privatization.
 - Rio found a “champion” for the privatization who was determined to overcome all obstacles to divestiture. His excellent legal team successfully fought off all legal injunctions.
 - The process was transparent. Use of the Rio Stock Exchange to present and evaluate bids was unacceptable under Bank procurement guidelines. But in Brazil, doing so, added to the project's transparency.
 - The Rio State team was very careful to prevent collusion among bidders. When they suspected collusion, they simply delayed the process and provided time for other bidders to join the process. (Despite these efforts, only one consortium bid on the CONERJ concession.)

- Despite their operating deficits, both the Metro and Flumitrens had tremendous potential because of their comparative advantages over competing transportation modes.
- The process was managed by the Secretary of Planning and the Secretary of Finance rather than the Secretary of Transport. This helped prevent operating agencies and transportation lobbies, which have close ties to SECTRA, from sabotaging the reform effort.

NEXT STEPS

71. Privatizing urban transit in Rio de Janeiro should raise the level of service, thereby benefiting the low-income residents who are the system's main users. Improvement of service at a tariff that can be borne by low-income residents should be the yardstick by which the success of the effort is measured.
72. The challenge for the next administration will be to ensure that true modal integration takes place. Creating a multimodal ticket will require introduction of special ticketing, such as the smart card, and an agreement on revenue sharing through some sort of clearinghouse. The State must coordinate and regulate the sector.
73. Since the State and municipal administrations belong to different political parties, care must be exercised to ensure that municipal buses do not engage in predatory pricing. Tariffs of intermunicipal buses cannot be set at levels that will hurt the Flumitrens concessionaire. Proposals to impose a flat fare for both urban and intermunicipal buses, for example, could have a very detrimental effect on Flumitrens. ASEP-RJ must also be very strict in ensuring that the concessionaires comply with the performance targets included in the contracts.
74. The State had planned to eliminate redundant staff through voluntary and involuntary staff reduction programs. During the preparation of the reforms, the State indicated that it had access to a credit line with the federal savings and loan (Caixa Economica Federal) to finance the severance payments of staff not kept on by the concessionaires. Unfortunately, this effort was only partially accomplished, and the number of redundant staff is much higher than expected. Nine months after the concessions, when this paper was written, there were close to 3000 redundant staff (2500 from Flumitrens and 500 from Metro), at a monthly cost of US\$6.3 million. Not having made the adequate provisions for severance payments to this staff was a major flaw in this process, and the State must quickly take steps to correct this failure. To take advantage of the savings provided by the concession, the State must either reallocate the redundant personnel to other agencies where they might be needed or find the additional funds to make the severance payments. Without these actions, the concessions will not produce the savings expected.

Table 4- URBAN TRANSPORT CONCESSIONS IN THE RIO DE JANEIRO METROPOLITAN REGION

	METRO	FLUMITRENS	CONERJ	CODERTE
PACKAGE SIZE	41 km right of way extension	200 km right of way extension	10 different sea- routes	One urban terminal - Menezes Cortes-
TERM OF THE CONCESSION	20 years, renewable, only once, for more 20 years.	25 years, renewable, only once, for more 25 years.	25 years, renewable, only once, for more 25 years.	.sale
OWNERSHIP	Rio de Janeiro State Government	Rio de Janeiro State Government	Rio de Janeiro State Government	Rio de Janeiro State Government
QUALITY SERVICE SPECIFICATION (in annex)	According to the performance targets for frequency, reliability, safety and comfort established in the Concession Contract.	According to the performance targets for frequency, reliability, safety and comfort established in the Concession Contract	According to the performance targets for frequency, reliability, safety and comfort established in the Concession Contract	NA
PAYMENTS (BY THE GOVERNMENT)	There are no payments by the Government.	There are no payments by the Government. Proceeds of METRO concession fee made available for investments	There are no payments by the Government.	NA
AWARD CRITERIA	Net Present Value of Best Offer above the Minimum Price (MP) plus materials in stock (UM) MP : R\$ 25m; UM : R\$ 3.56m	Net Present Value of Best Offer above the Minimum Price (MP) plus materials in stock(UM);MP : R\$ 28m; UM : R\$ 8.25m plus Discount on capital made available by State; plus cost of optional investments assumed by the bidder	Net Present Value of Best Offer above the Minimum Price (MP): -100% of the ordinary shares: R\$28.4m (MP); 90% for the new control group and 10% for employees. Selective lines: refrigeration, higher speed and more comfort. Term: Charitas - Niterói(10 months); Praça XV - Barra (36 months); Rio - São Gonçalo (24 months)	Highest bid above minimum price. Sale by auction with a minimum price R\$80m
TARIFF RENEGOTIATION CONDITIONS	Single Tariff for one-way trip was set by State in the bidding documents and can only be updated for inflation according to formula. For expansion and new investments in the present contract, the Concessionaire must submit a plan for the State Government approval.	Single Tariff for one-way trip was set by State in the bidding documents and can only be updated for inflation according to formula The Concessionaire will be allowed to collect a higher tariff (50%), if he installs air conditioning systems in the trains, according to the Contract. For expansion and new investments in the present contract, the Concessionaire must submit a plan for the State Government approval.	Single Tariff for one-way trip was set by State in the bidding documents and can only be updated for inflation according to formula.Special line for vehicles transportation (Ferryboat): R\$ 6.6m(MP) - only in case of implantation.	
PERFORMANCE ASSURANCE	According to the Concession Contract under the supervision of ASEP-RJ (Public Services Regulatory Agency of the Rio the Janeiro State)	According to the Concession Contract under the supervision of ASEP-RJ (Public Services Regulatory Agency of the Rio the Janeiro State)	According to the Concession Contract under the supervision of ASEP-RJ (Public Services Regulatory Agency of the Rio the Janeiro State)	
NETWORK PLANNING	The State will establish the conditions for operations of new lines.	The State will establish the conditions for operation of new lines.	The Concessionaire may participate, when invited, of planning studies in charge of the State Government.	
ACCESS TO FACILITIES		The Concessionaire of the freight railway system has access to FLUMITRENS lines and pays a track right.		

Table 5- LEVEL-OF-SERVICE SPECIFICATIONS

FLUMITRENS

The Concession Contract establishes the following performance indicators as well as the formula to calculate them and the penalties for non compliance with such indicators :
IRI- compliance with scheduled service at peaks(regularity) defined as the ratio between adequate intervals between trains and the total number of intervals between trains; the time of day to estimate this indicator are daily peak periods, in extreme and center points of a railway line. Formula : $IRI = (Qa/Qt) \times 100$ where Qa is the quantity of adequate intervals between actual trains in the period under observation and Qt is the total quantity of intervals between actual trains in that spot of the line and during the observation period. An adequate interval is one that is within plus or minus 20% of the programmed interval.

IPO-punctuality indicator- ratio between trains on schedule (Th) and total number of trains during the observation period (Tr);Formula: $(Th/Tr) \times 100$

ICO-Supply compliance Indicator, ratio between number of actual trips (Vr) and number of programmed trips during the observation period (Vp); formula $(Vr/Vp) \times 100$

MKBF-million kilometers between failures (MKBF).

It also includes

-summary table of operational parameters;

-acceptable waiting times for omnibus trains in all stations included in specified lines, for peak and off-peak periods.

METRO

The Concession Contract establishes the following parameters to evaluate the quality of the level-of-service offered: service parameters and performance parameters :

The supervision of the services under concession is done through the following parameters:

-performance indicator;

ICO-AS ABOVE.

IRI -AS ABOVE;

ION- notable occurrence indicator, ratio between number of notable occurrences (On) which caused delays of 5 minutes or more in train departures and the maximum number (Om) of acceptable notable occurrences (5) during the observation period ; Formula: $(On/Om) \times 100$

ICD-composite performance indicator, $ICD = ICO + IRI - (0.2 \times ION)$

CONERJ

The concession contract includes indicators which cover efficiency, regularity, continuity, safety, courtesy to users.

ANNEX 1

SECTRAN and Its Agencies

1. Since most of the urban transport component deals with the agencies which are subordinated to the Secretary of Transport of RJ (SECTRAN), a summary description of those agencies and of SECTRAN is provided in the next paragraphs and summarized in Table 1.

2. **SECTRAN** is responsible for policy setting, regulation and supervision of all public and freight transport in the State which crosses municipal boundaries. In addition, it is also responsible for rail suburban transport in the RJMR, ferry boat services in the Guanabara, Sepetiba and Ilha Grande bays, and for the Rio de Janeiro Metro. SECTRAN has a staff of 330 employees (166 in the operational areas and 164 in administrative functions) and is organized as a traditional transport ministry with departments dealing with Passenger Transport, Freight Transport, Special Projects, Transport Engineering and General Administration in addition to divisions in charge of technical and legal support to the Secretary and the Undersecretary. SECTRAN is not responsible for road infrastructure which is under the Secretary of Public Works. The main agencies subordinated to SECTRAN are: a) Companhia Fluminense de Trens Urbanos (Flumitrens); b) Companhia do Metropolitano do Rio de Janeiro (Metro); c) Companhia de Navegação do Estado do Rio de Janeiro (CONERJ); Companhia de Desenvolvimento Rodoviário e Terminais (CODERTE); Companhia de Transportes Coletivos do Estado do Rio de Janeiro (CTC); Empresa Estadual de Viação (SERVE); Departamento de Transportes Rodoviários do Estado do Rio de Janeiro (DETRO). At the end of 1995, SECTRAN and its agencies had a total staff of 15,942 employees of which 4,218 in administrative functions and 11,724 in operating functions. SECTRAN and its agencies received subsidies totaling R\$356.11 (US\$ 371 million) in 1995.

3. **Flumitrens**, the suburban rail company was, until December 1994, part of the federally-owned Companhia Brasileira de Trens Urbanos. In a Bank financed decentralization program (Ln. 3633-BR), the Federal Government agreed with the State that in return for investing US\$272 million (of which the Bank loan amounted to US\$128.5) in infrastructure and equipment of the system, the State would assume the operational and financial responsibility of Flumitrens free of debt and would receive all the assets of the company including land and terminals needed for operational purposes. The State saw in this decentralization program an opportunity to better run the suburban rail system, to be more responsive to the users, and to improve integration with the bus, subway and ferry system all under its jurisdiction. As part of the agreement to receive the Flumitrens system, the State had reached an agreement for the Municipality of Rio de Janeiro (RJM) to take over the Metro. After two years of protracted negotiations, RJM decided not to take over the Metro. The State had, at that time to decide whether to assume Flumitrens and continue with the Metro or to withdraw from the decentralization program. Since as part of the decentralization program, the Federal Government would also absorb a US\$ 2.8 billion debt of the Metro with the Federal Government, that would

allow the State to restart the Metro works which had been halted in the last ten years as well as it would unblock other federal funding to the State, the latter decided to continue with the decentralization program. The long negotiations between the State and RJM, resulted in implementation delays of Ln. 3633-BR which affected the overall performance of Flumitrens, particularly the condition of the train fleet which deteriorated very fast. The working subsidy estimated at appraisal for 1994 was around US\$80 million while the actual subsidy paid by the Federal Government at that time was US\$160 million, i.e., twice as much, mainly due to a drop in demand caused by very poor train availability and very high fare evasion. To compensate for this deviation, the Federal Government agreed to meet a full year of payroll after decentralization (1995) to give time to the State to restructure the system. However, during 1995, salary increases stipulated by federal legislation combined with further deterioration of the train fleet and slow restructuring, increased the 1995 subsidy to US\$188 million. In fact, 1996 is the first fiscal year in which the State is going to meet the payroll of Flumitrens. During the mid-term review of Ln.3633-BR, agreement has been reached in re-allocating more funds for train rehabilitation and decrease the amounts spent in station rehabilitation. This would bring the ridership to close to 900,000 passengers per day at the end of the project instead of the projected 1.1 million forecast at appraisal. It is estimated, however, that a further investment of US\$ 373 million will be needed to bring Flumitrens infrastructure and equipment to a standard which is attractive to private concessionaires and capable of serving 1.28 million passengers/day. This additional investment is essentially (about 80%) for train rehabilitation.

4. Flumitrens had at the end of 1995 (i.e. at the end of the first year under the State), 7871 employees of which 826 in administration and 7045 in operations. The tariff charged by the system in 1995 was US\$0.42, much less than the competing intermunicipal buses (US\$1.35). Most of the users are low-income (1-2 minimum salaries/month) and therefore the government is reluctant to raise the tariff which is traditionally set at 90% of the municipal bus fare. Despite their low income, surveys show that users are willing to pay more if the service becomes more reliable and frequent and that can only be achieved when the train fleet is rehabilitated. The State has decided that, as part of a program to reduce Flumitrens subsidy, it will call for bids for a long-term concession of the system to a private sector concessionaire which will operate and maintain the system at the lowest net present value of cost to the Government over the period of concession. In the meantime it is expected that the investments under Ln.3633-BR plus investments to decrease the maintenance backlog will improve train availability. Furthermore, the State has asked the Bank to evaluate a loan to finance the additional US\$373 million estimated to bring the system to a condition which will make it more attractive to potential private sector concessionaires.

5. Flumitrens employees contribute to a federal railway fund (REFER) which complements the social security pensions to which they are entitled. The ongoing staff downsizing program in Flumitrens and the Metro is likely to affect REFER's capacity to repay its members since the laid off employees are entitled to withdraw their contributions.

6. Flumitrens 's subsidy per passenger in 1994 was US\$1.558 while in Argentina the privately run suburban rail system of Buenos Aires is US\$0.32. The subsidy per car-km supplied by Flumitrens is US\$5.03 while in Buenos Aires was US\$1.03. Finally, paying passengers per staff in Flumitrens were 12488 while in Buenos Aires were 42860. These comparisons are only to suggest that restructuring of Flumitrens through concessions may boost productivity and drastically reduce the subsidy per passenger.

7. **Metro** operated only 2 lines one of 11.6 km and 15 stations and another with 11.4 km and 7 stations for a total of 23km and 22 stations. Metro was always under the State responsibility and its works have been halted since the beginning of the previous administration due to the inability of the State to pay the debt service owed to the Federal Government. At the end of 1995, Metro had 3272 employees of which 1842 in operations and 1430 in administrative functions. This compares with the Santiago do Chile Metro which with the same length operates with only 1300 employees and , with the same tariff as the Metro (US\$0.45) covers all its costs. Metro received a subsidy of R\$109 million (US\$ 113.5 million) in 1995 and transported 73.1 million passengers. This subsidy is expected to increase to US\$120 million in 1996 if the system is not restructured . In 1995, Metro's subsidy per paying passenger was us\$1.34 and the subsidy per car-km supplied was us\$12.21 compared respectively us\$0.08 and us\$0.60 in the Buenos Aires subway under private concession. The State was able to secure a BNDES loan of US\$298 million which together with State funds of US\$322 will allow Metro to extend its system to 35 km and finish works which had been halted since 1990. With these investments, Metro expects to double its ridership to approximately 1 million passengers /day ,and decrease its very high subsidy. The State has also decided to have Metro managed by a private management and later on by a concession as in Buenos Aires and intends to bring its subsidy to zero by the end of 1998.

8. **CONERJ** operates the ferryboat system between Rio /Niterói , Rio/Paquetá and Rio/Ribeira in the Guanabara Bay and the route between Mangaratiba/Abraão/ Angra dos Reis in the Sepetiba Bay. CONERJ also administers and operates the Ferry Terminals of Praça XV in Rio, Niterói, Paquetá, Ribeira, and also the docking quays in Mangaratiba, Abraão and Angra dos Reis. CONERJ has 19 ferries of which eleven have a 2000 passenger capacity, four have a capacity of 1000, two of 500 , two of 370 and 3 support vessels. In 1995 , CONERJ had 1097 employees of which 381 were in administrative functions and 716 in operating functions. Most of the passengers (93%) are carried in the Rio (Praça XV) -Niterói link which at peak hours offers a 15 minute headway service for a 5 km (20 minute) crossing. CONERJ transported roughly 24 million passengers per year and in 1995 had a subsidy of R\$29.64 (US\$30.875) which gives a subsidy per passenger of R\$1.2 (US\$ 1.286) per passenger. RJ intends to sell the assets of CONERJ and concession out its present lines to the private sector.

9. **CTC /SERVE** were bus companies which operate in the municipalities of Rio de Janeiro , Niterói, São Gonçalo e Campos providing intermunicipal services and integrated services with other modes. CTC also operates in the Santa Teresa neighborhood of Rio where it operates the tramways (bondinho). CTC/SERVE operate a total of 26 bus routes and 2 tramway routes. They have a fleet of 369 buses of which 117 are fueled by gas, 50

are articulated diesel-fueled buses and 142 are standard diesel buses with more than 7 years. In 1995, CTC/SERVE had a total of 2496 employees of which 1048 in administrative functions and 1448 in operating functions. CTC/SERVE staffing per bus is much higher than that of its private sector competitors who do not receive subsidies. CTC/SERVE transported 26.6 million passengers in 1995 and received subsidies which amounted to R\$36.79 (US\$38.32) or a subsidy of US\$1.441 per passenger carried. The State has decided to sell CTC/SERVE assets and concession out its lines to the private sector operators.

10. **CODERTE** owns 18 road terminals, 2 garage buildings in Rio, 12 parking lots located in several municipalities, in addition to shops, rooms and commercial real estate totaling 200 properties. The road terminals of Novo Rio and Roberto da Silveira are privately managed. At the end of 1995, CODERTE had 695 employees of which 306 in administrative functions and 389 in operating functions. In 1995, CODERTE turned an operating profit of R\$1.21 million (US\$1.26 million). The State feels that CODERTE could be much more profitable and therefore it plans to increase private sector participation in the management of CODERTE's properties and to sell some of the assets to the private sector.

11. **DETRO** is the agency in charge of regulation of the intermunicipal bus system in the State. There are two types of services regulated by DETRO : a) the urban services which use vehicles with two doors, common seats, turnstiles, and can circulate with standing passengers and b) the intercity services whose buses have reclining seats and which can not circulate with standing passengers. In 1995 there were 106 licensed bus companies regulated by DETRO. DETRO's functions are to regulate entry/exit, tariff setting, enforce safety and monitor compliance with agreed level-of-service. DETRO had 178 employees in 1995 of which 63 in administrative functions and 115 in operating functions. DETRO turned an operating profit of R\$3.48 million (US\$3.625 million) . The State will have to continue to regulate buses and most likely DETRO will continue with SECTRA. It is also expected that the intermunicipal bus regulatory framework will be revamped and adapted to take into account the recently approved concessions law.

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